# Pest Update (May 25, 2011)

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Note: samples containing living tissue may only be accepted from South Dakota. Please do not send samples of dying plants or insects from other states. If you live outside of South Dakota and have a question, instead please send a digital picture of the pest or problem. **Walnut samples may not be sent in from any location – please provide a picture!**

**Available on the net at:**
http://sdda.sd.gov/Forestry/Educational-Information/PestAlert-Archives.aspx



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## Plant development

We are still behind in normal plant development. The crabapples have finished blooming by now and the lilacs are just beginning to bloom in town, again a little behind schedule. The weather is expected to turn warmer so hopefully the plants will be able to catch up.

## Current concern – Flooding along the river: What will this do to the trees?

The expected release of water from the dams is anticipated to result in flooding of portions of communities along the river. Obviously this is a major concern to the homeowners that may be impacted by the flooding and what might happen to their trees and shrubs is probably way down the list of concerns. However, here is some information regarding the effect of growing season flooding on trees.

First, this is about the worst time for trees to experience flooding. The trees have, or are, leafing out, and growth activities are near their highest rate, including root growth. While most people are aware of photosynthesis, the process where trees "take in the bad air ($CO_2$) and give back the good air ($O_2$)" most are unaware that living tree tissue is also respiring, essentially taking in the good air ($O_2$) and giving off the bad air ($CO_2$). This also applies to roots and they have a surprisingly high oxygen demand. If trees are standing in water during the growing season this reduces soil oxygen levels dramatically and tree root systems will decline and begin to die. As the roots die, the tree's ability to absorb water decreases and the foliage begins to wilt. Paradoxically the tree dies from the lack of water because it is standing in water, a phenomenon referred to as physiological drought.

Standing in water or even saturated soils is harmful to all trees at this time of year. What will determine whether a tree recovers from this stress or dies depends on a number of key factors; the species, age, duration of flooding, depth of flooding and water movement.

**Species -** While flooding is harmful to all trees, there are some tree species that have a very low tolerance to this condition while others can withstand days or even weeks standing in flood waters.

The commonly planted species with the highest tolerance to flooding. These trees may be able to withstand several weeks of flooding.

Red maples(*Acer rubrum*)
Green ash (*Fraxinus pennsylvanica*)
Black ash (*Fraxinus nigra*)
Willows (*Salix*)

The commonly planted species with the lowest tolerance to flooding. These trees may decline after only a few days of flooding.

Sugar maple (*Acer saccharum*)
Paper birch (*Betula papyrifera*)
Crabapples and apples (*Malus*)
Stone fruits, cherries, peaches and plums (*Prunus*)
Pines (*Pinus*)
Spruce (*Picea*)
Mountainash (*Sorbus*)
Lindens (*Tilia*)

**Age –** the younger the tree, the more likely it can withstand flooding. This comes as a surprise to most people who mistakenly assume that the big old trees can take it the best. The trees that will be least impacted are between 2 and 6 inches in diameter (measured at 4.5 feet on the trunk).

**Duration, depth and water temperature and movement –** These are all key factors in determining the impact of flooding on trees. The *longer* the water remains this summer, the greater the impact. If the flood water recedes within a week, many trees will recover. If the waters remain for a month or two, most trees regardless of tolerance will decline and die. The *depth* is also an important factor. Water on the trunks is considerable more harmful then water just covering the roots so a good rule of thumb is the higher the water the greater the injury. And finally the *water temperature and movement* have an influence on the amount of oxygen carried in the water. The warmer the water and the less movement will result in lower the oxygen level and increase the potential for injury.

**Simply put, if the flood waters become stagnant and remain for several weeks covering the lower 2 or 3 feet of the tree's trunks, most likely the tree will decline and die**.

## Tasks to complete now

**Clearwing ash borer** treatment with an insecticide containing permethrin as an active ingredient can begin now. The adults are usually out flying about a week or so after Vanhouttee spireas begin to blooms and these shrubs are in flower. You know when the adults are flying out from an infested tree by the papery pupal skins and sawdust left in or around the emergent hole.

**Diplodia tip blight** treatments should be started now. This is probably the most common disease of pines, particularly Austrian pine. Symptoms in early summer are the new needles becoming brown and stunted. Twigs may be infected and become stunted and deformed. The treatment is a fungicide containing thiophanate-methyl, propriconazole or chlorothalonil just before the buds sheaths have opened, timing is critical, and repeat the treatment in 10 to 14 days. The bud sheaths are just beginning to open now throughout the state so try to get the first application on in the next week.

**Dothistroma treatments should also be started now.** This is a very common disease of Austrian pines this year (also ponderosa pines in East River shelterbelts). The symptoms are dead needle tips beyond the yellow to tan spots. The spots have now enlarged to form brown to reddish brown bands and sometimes fruiting structures can be seen in the bands. The infection this year is so bad that the entire needle may be discolored. The treatment is a copper fungicide applied now as the candles are expanding and repeated in late June and again in mid-July. There are a number of copper containing fungicides available such as Camelot for those individuals who have to spray several or more trees. Chlorothalonil-based fungicides have shown effectiveness for treating the disease but are not registered for this use.

**Tent caterpillars are getting bigger!** Tent caterpillars, eastern, forest and western, are common defoliators of mountainash, cherry, crabapples and plums. The insects have reached a size where most forms of natural controls such as breaking open the nest to allow predators and parasites to enter, are no longer effective. Once the larvae become larger, more than 1-inch long, insecticides containing carbaryl, or malathion are the treatments of choice.

## Tasks to do in a week or two…

**Codling moth** – the larvae of this insect burrow into the apple, usually near the base of the fruit, resulting in a trail through the apple filled with brown, powdery

frass. This frass often extrudes from the entry hole. Treatment is usually an application of malathion sprayed about 10 days after petal fall and then 3 more applications spaced about 10 days apart. Do not spray insecticides on apple trees while they are in bloom! You will kill the pollinators. If you are using a general fruit multi-purpose spray, it probably has an insecticide in it so these sprays should also not be applied during bloom.

## E-samples

**Its back…** I received this picture from Pierre of a white ash leaf with the beginning of **ash rust**. The disease begins as bright red to orange spots on the petioles and undersurface of the leaves. These enlarge during the season, becoming almost gall-like and further distorting the leaves. These infected leaves usually drop prematurely resulting in another round of telephone calls and emails from alarmed tree owners as their yards become filled with leaves in July and August. *This year I am already seeing the leaves falling from white ashes, the ash species most susceptible to the disease*. The conditions are just right for the development of the disease, cool and wet. This is a similar weather pattern to what occurred in 2008 and that year we had wide spread defoliation of ash from this disease. The disease, as with many other rust diseases, has two hosts, one is the ash and the other is a number of grasses. The disease can be control with a single application of a fungicide containing myclobutanil made just as the leaves come out.

I also received this great picture of **western gall rust**, from Dave, one of the service foresters from the Department of Agriculture. This is a common disease on pines in the western part of the state. This rust disease is unusual as it does not require two different hosts (as the aforementioned ash rust). The disease stays on pine so the spores released from the gall will infect the pines surrounding the tree (as well as infect the current host). The disease will often result in branch dieback but the death is usually due to other fungi that invade the rust infected tissue. There is a wide variation in susceptibility among pines so it is common to see a heavily infected trees surrounded by trees that do not have a single gall on them.

## Samples received

Beadle County **What is wrong with the blue spruce in Todd's shelterbelt. They were planted about 6 years ago and are about 12 feet tall.**

The branch samples contained no signs or symptoms of common insects or pathogens. However, the shoot growth for last year was about half that of the previous year's indicating that some stress occurred to the trees in 2010 or late 2009. The foliage was also discolored, a common symptom with root-related problems. You mentioned that the site had good drainage so that can be ruled out as a source but what else may have occurred a year or so ago? I cannot tell from the sample.

Minnehaha County **What is wrong with these sugar maples? The foliage is become discolored.**

This is maple anthracnose, a disease I am seeing more of this year due to the cool, moist weather. There is nothing that can be done at this time to manage the disease and most likely the trees will produce another set of leaves and recover – though a little weakened from the defoliation.

Union County **What is wrong with these spruce from Burbank?**

I suspect there is a soil related problem here considering that 4 of 5 trees have died. The sample did have a spruce needleminer in it. This is a common insect that defoliates spruce by burrowing through the needles and then later webbing detached needles together as a nest. If the needleminer was the only problem I would have suggested spraying the tree with a high-pressure stream of water to dislodge the miners. This will probably only have limited value to this tree as, again, I suspect other issues.